Read Special Articles on Sewage Disposal.

CALIFORNIA ~~STATE~~ BOARD OF HEALTH.

MONTHLY BULLETIN

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REGULAR MEETINGS

The California State Board of Health meets regularly the first Saturday of each month, but the stated meetings of January, April, July, and October constitute the quarterly meetings required by law to be held at the Capitol of the State.

By courtesy of the University of California the Food and Drug Laboratory and the Hygienic Laboratory are located in University buildings at Berkeley, California.

Address all communications to the

SECRETARY, Sacramento, California.

MARCH BULLETIN.

In answer to a large number of letters that have come into the office of the State Board of Health, asking for information about sewage disposal in general and about the septic process in particular, the Board has deemed it expedient to devote this number of the bulletin largely to a discussion of the "septic tank" method. The following pertinent comment of Professor C. G. Hyde, however, should be borne in mind in reading these articles: "Pursuant to your letter * * * I take pleasure in sending you herewith a few comments with respect to the use of septic tanks in California. * * * It seems to me that if your proposed bulletin should deal ONLY with septic tanks it would be too restricted and would give but a one-sided view of the sewage disposal problem, and in such case might not place the emphasis just where it belongs." Other valuable methods of sewage disposal will be considered in detail in a later issue of this Bulletin.

SEPTIC TANKS.

N. D. BAKER, Engineer Inspector for California State Board of Health.

PURPOSE.

The septic process is used for three reasons:

1. To get the sludge or solids out of the sewage so that the liquid part of it may be disposed of by some other means. If this is to be done by broad irrigation or by filtration through gravel beds it is essential that the sludge be taken out first to prevent clogging of filters and of the distributing ditches. The sludge might be removed by plain sedimentation, chemical precipitation, or to some extent by screening, but this leads up to the second purpose of the septic tank which is

2. To destroy the sludge. In using any of the other three methods of sludge removal, the great question of sludge *disposal* remains unsolved. The sludge has been taken out but not destroyed. The properly operated septic tank both removes and destroys the sludge at a very low cost.

3. Another purpose of the septic process is to carry the sewage through the first stages of putrefaction and to render it less likely to create a nuisance when discharged into streams or other bodies of water or on land. It has been estimated that a stream will receive twice as much septic sewage as it will take raw sewage before the point of pollution is reached which will cause a nuisance.

THEORY OF A SEPTIC TANK.

The septic process differs from others in that here the organic matter in the solids is broken down to simpler substances by the putrefactive or liquefying bacteria. These low forms of vegetable life work best in absence of air, and they use up the dissolved oxygen in the sewage so that the action, if complete, would give an effluent which would contain *no* dissolved oxygen. After these (anaerobic) bacteria have done their work, the sewage needs to have oxygen introduced so that the (aerobic) oxygen-using bacteria may perform their work of oxidization. It is by the activity of these aerobic or nitrifying bacteria that the products of anaerobic action are oxidized and the resulting condition of the sewage rendered stable, *i.e.*, incapable of further putrefaction.

DESIGN AND OPERATION.

Probably in no other branch of engineering work is there a wider range of variation than in the design of septic tanks. The chief objects of design should be: to get a sufficiently long storage of the sewage to complete the septic action and still not have it too long; and to enforce a uniformity slow and diffused flow through the tank so that there will be no parts of it where the sewage remains stagnant. Also to properly proportion the tank so that the surface area shall be sufficient for mat formation. In some tanks series of baffles are introduced to insure uniform flow. In some of these the baffles are vertical, let down from the top and built up from the bottom, while in others the baffles extend into the tank from the sides.

Size.—The size should be sufficient to hold the flow for the period of storage desired. In different designs this varies from twelve to forty-eight hours. Perhaps eighteen hours' flow is a good average to use. Many of the tanks now in use are rectangular, but there have also been designs made for circular tanks in which the sewage is taken in at the center and discharged around the circumference. (Ref., Engineering Record, vol. 60, page 249.)

Area.—Heretofore this point has not been emphasized, but it is important that there be sufficient area for mat formation. This varies with the total solids in the sewage, and this in turn varies directly with the number of persons connected with the system. If the area is not sufficient, as might be the case where the flow per capita is small, there will be a continued accumulation of sludge until it gets so thick that the tank has to be cleaned and started again. In tanks of this kind one of the purposes of the septic tank is defeated, for the tank only removes the sludge and does not destroy it. In tanks of good design the surface area varies from one half to one square foot or more per person. The first figure is hardly large enough.

Roofs.—The question of roofing a septic tank has aroused some discussion. On the one hand it is claimed that since it is a bacterial process and since bacteria develop and work best in the dark, a roof is necessary to shut out the light. Against this it may be said that after the ''mat'' is formed on the tank it shuts out the light as effectually as a roof. Again, some engineers think an air-tight roof or covering is essential to foster the anaerobic bacterial action. The same answer is applicable here as was given above; that the mat, once formed, is a seal against air as well as light. In fact, there are many successful tanks which are not tightly covered. The best argument in favor of roofs is that the wind tends to break up the mat and prevent its formation in the early stages.

Aeration.—Because the action inside the tank is essentially an anaerobic one, the inflow should be so arranged that as little air as possible is carried in with the sewage. At the outflow pipes provision ought to be made for aerating the effluent. This may be done by making it pass over weirs in thin sheets, or pass upward through vertical pipes and over the edges, falling in a circular sheet. Other devices are used—throwing the sewage through the air in a spray and pumping air through it.

WHAT SHOULD AND SHOULD NOT BE EXPECTED OF A SEPTIC TANK.

A properly designed and operated septic tank should give an effluent containing very little solid matter in suspension, and that only in finely divided particles. The effluent will still be putrescible and offensive, and may (and very likely will) cause to some extent a nuisance unless properly handled while being further purified.

The bacterial action should destroy all but the mineral ash of the sludge, and the tank ought not to have to be cleaned oftener than once in several years. Tanks cleaned every month are not properly "septic tanks," but should be called "settling tanks" or "sewage tanks."

The mat forms on the surface after a week or more and becomes thicker until the tank reaches a condition of equilibrium. The mat is usually 12 to 18 inches thick at this time, although one case was called to my attention where it continued to grow until it occupied a large proportion of the tank and had to be removed. This was an instance of too small a surface area.

The septic process is only a *preliminary* treatment and can be regarded as nothing more. The effluent is not stable and should *not* be allowed in water used for drinking water supplies unless further treated. There is little evidence to prove that pathogenic bacteria do not survive the septic process in sufficient numbers to render the effluent dangerous without further treatment.

Limitations.—In applying the septic process of sewage disposal to industrial wastes, each particular problem must be considered by itself. It is largely a problem for the chemist to determine what the sewage contains and what effect if any it will have on bacterial action. Through the Santa Clara and San Joaquin valleys the cannery wastes present a special problem. Sometimes these contain large quantities of lye used for peeling fruit. It is probable that this lye would act as a disinfectant in the sewage and deter or entirely prevent septic action in the tanks. At other places there are winery wastes and wastes from tanneries, dye works, pickle factories, paper mills, iron foundries, woolen mills and other establishments, each of which presents its own particular problem and must be dealt with accordingly. Very often it is more desirable to keep such wastes out of the main sewers and dispose of them independently.

Another point of note is that to lend itself readily to septic treatment, sewage should not be too dilute. In any method of treatment it is only economy to treat as small a quantity as possible, since septic treatment depends on bacterial growth in the sewage.

Wherever septic disposal is used the storm drains ought to be in a separate system from the domestic sewers. Sometimes it is desirable to let the first "run-off" from the streets after a "dry-spell" go into the domestic sewers for purification treatment, for it sometimes carries considerable organic matter, but after the streets are washed clean this should no longer be done. In some cities this is provided for by connections between the storm drains and domestic sewer mains which are opened for a short time when rain begins to fall.

TREATMENT OF SEPTIC EFFLUENT.

To complete the purification of sewage, the effluent of septic tanks must be subjected to a final process in which the nitrifying or aerobic bacteria oxidize the products of the anaerobic action.

Sometimes this can be done at a profit by using the water for irrigation. For reasons that will be apparent it ought not be used for berries and soft skinned fruits nor for vegetables, such as celery, radishes, lettuce and those that are to be eaten raw. Where space is too limited for disposal by irrigation, contact beds or sprinkling filters are sometimes made use of. The materials used are broken stone, brick, coke, cinders, etc., the idea being to have a large area exposed to the sewage. The beds are filled and drained alternately at intervals of eight to twelve hours. During the period when the filter is empty cultures of aerobes develop on the surface, oxidizing the material left there by the sewage. The purification depends on a bacterial process and the action is that of aerobic forms which oxidize the organic matter and render it nonputrescible. These filters need not be expensive. They require some attention but various patent automatic devices for regulating them are in use which serve to minimize the work of running the filter as well as to remove the personal equation of the attendant.

The use of slate beds is attracting some attention. These are made up of horizontal slabs of slate held apart at the ends by stone blocks. For the slate beds it is claimed that worms develop on the slates which work over the sludge and reduce it to harmless and inoffensive humus. The slate beds, like the contact filters, are dosed and rested alternately, multiple beds being necessary for this reason. A very good account of slate beds can be found in the Engineering Record, vol. 60, page 511.

DATA ON SOME CALIFORNIA SYSTEMS.

Fresno.—Population, estimated 23,000 to 25,000. Average sewage flow 6 to 7 cubic feet per second; 4,000,000 gallons per day. Concrete tanks; eight tanks each 36 by 90 by 6½ feet. Total capacity, 1,260,000 gallons. Storage about 7 hours. Effluent used for irrigation. Area surface 26,000 square feet, or 1 square foot per person. City engineer, Mr. C. P. Jensen. Tank designed by Mr. Geo. L. Hoxie, formerly city engineer. The sludge has to be removed every few weeks.

Colusa.—Population, 1,500. Reinforced concrete tanks; 2 units each 180 by 6 by 7½ feet. Total capacity, 50,000 gallons. Total area, 2,160 square feet, or 1.4 square foot per person. Designed and built by Mr. J. W. Kearth, city engineer. Now being built. To be put in operation about 1910.

Selma.—Population, 2,500. One concrete tank, 40 by 100 by 8 feet. Capacity, 240,000 gallons. Area, 4,000 square feet, or 1.6 square feet per person. Estimated storage, 24 hours. Just installed and not properly working yet. Designed and built by Mr. Schaffer, city engineer.

Hanford.—Population, 6,000. Tank designed by Dr. Musgrave, City Health Officer. Timber lined tank 65 by 24 by 7 feet. Capacity, 80,000 gallons. Area, 1,560 square feet, or .26 square foot per person. Estimated storage, 5 to 8 hours. Septic action incomplete. Effluent carries solid particles. Used for irrigation.

Corning.—Small private tank owned by Hotel Maywood.

Eldridge.—Population, 1,000. Wooden tank 150 by 15 by 10 feet, covered. Capacity, 155,000 gallons. Area, 2,250 square feet, or 2¼ square feet per person. *Storage, estimated 24 hours. Effluent very clear, but rather offensive.

Willows.—Population 2,000. Settling tank of concrete, open, 33 by 10 by 10 feet, designed for sewage; depth of 2½ feet. Capacity, 6,200 gallons. Area, 330 square feet, or .16 square foot per person. Not designed for septic treatment.

Sebastopol.—Population, 1,500. Timber lined tank 160 by 15 by 6 feet, covered. Capacity, 100,000 gallons. Area, 2,400 square feet, or 1.6 square feet per person. Storage, estimated 10 to 15 hours. Effluent clear and free from solids. Used for 3 years, and very small sludge deposit.

Santa Rosa.—Population, 6,000. Roofed, unlined tank, 250 by 27 feet at surface,

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*Measured flow Oct., 1909—77,000 gallons, septic period 48 hours. Action incomplete.

8 feet deep; slide slopes 1 to 1. Capacity, 300,000 gallons. Area, 6,750 square feet, or 1.1 square feet per person. Estimated storage, 4 hours. Septic action incomplete.

Bakersfield.—Population, 10,000. City engineer, Mr. Buffington. Circular concrete tank designed by Mr. Buffington, 200 feet diameter, 8 feet deep. Capacity, 1,600,000 gallons. Area, 31,400 square feet, or 3 square feet per person. Estimated storage 16 hours. To be put in operation about 1910.

Redondo Beach.—City engineer, Mr. A. A. Henderson. Septic tank designed by Olmstead and Gillelen, Wright and Callender Building, Los Angeles. Tank 160 by 50 by 7½ feet; reinforced concrete arched roof. Capacity, 450,000 gallons.

Long Beach.—Population, 20,000. Timber lined tank, two units, each 610 by 6 by 6 feet. Capacity, 44,000 cubic feet—330,000 gallons. Area of surface, 7,300 square feet, or .37 square foot per person.

Sawtelle, Soldiers' Home.—Total population, 3,000. Two tanks, independent, but same size and same flow. Each tank 70 by 20 by 8 feet. Capacity, each 82,500 gallons. Total capacity, 165,000 gallons. Estimated storage 6 hours. Area of surface (total for both) 2,800 square feet, or .9 square foot per person. Tanks doing good work.

Pomona.—Population, 10,000. Tank 45 by 24 by 8 feet, cement lined. Capacity, 65,000 gallons. Flow estimated at 75 gallons per capita, 750,000 gallons. Estimated storage about 2 or 3 hours. Area, 1,100 square feet, or .1 square foot per person. Tank too small, and has to have mat removed frequently.

Patton State Hospital.—About 1,500 inmates. Concrete septic tank. Two units; only one in use. Each unit 116 by 20 by 7½ feet. Capacity, 131,000 gallons. Estimated storage 10 hours. Area of surface, 2,200 square feet, or 1.5 square feet per person.

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A GENERAL COMMENT ON SEPTIC TANK ESSENTIALS FOR CALIFORNIA.

PROFESSOR CHARLES GILMAN HYDE, University of California.

In general it should be said that the climatic conditions of California are most satisfactory for producnig high efficiency in all the biological processes of sewage purification, as in the septic tank, the contact filter, the sprinkling filter and other processes of filtration on prepared beds and on broadly irrigated fields.

As to septic tanks, it should be said that these should in all cases be carefully proportioned to the sewage flow, whether it be for the wastes of the household or for a municipality. The capacity should be such that the storage should seldom be less than eight hours of the maximum flow of sewage, and practically never would the storage require to be more than twenty-four hours. For those effluents which are to be treated by some purifying processes, such as subsoil or surface irrigation, the period of storage should not be too prolonged, say generally not more than sixteen hours. In cases where the effluent is to be disposed of directly, without other treatment, in some watercourse, a longer period may properly be given. The dimensions should be carefully chosen, and the length should be about three to five times as great as the depth and width. The inlet and outlet devices should be placed at about three-eighths depth to allow for scum and for sludge at the top and bottom respectively. Special precautions should be taken to diffuse the sewage as it enters and to take the effluent from the tank through a number of small scattered outlets arranged to give the maximum diffusion. Possibly these diffusers and other refinements, which would be very desirable for municipal works, might receive considerably less attention for small works for private dwellings.

CESSPOOLS.

The following extract from an excellent article in the May bulletin of the Kansas State Board of Health is included as a preface to the article on residence septic tanks kindly prepared by the California State Engineering Department.

1. *"Does the uncemented cesspool menace the purity of the neighboring ground-water supply used for domestic purposes?"*

It may; the geological formation must be considered. Naturally the degree of pollution of a ground-water supply depends on the nature of the soil into which the sewage discharges. If the soil is close sand or clay, the filtration of the liquid portions of the sewage would be slow and a greater degree of purification obtained than if the soil were a loose sand and gravel, permitting the cesspool to be rapidly emptied with comparatively little filtration directly into the water-bearing stratum. So, also, if there is an intervening stratum of clay or rock between the drainage of the cesspool and the water-bearing stratum, there might be an impervious barrier to the sewage reaching the water below such formation. It must be borne in mind, however, that the piercing of such presumably impervious stratum in boring or digging a well, and the constant possibility of a natural fault or fissure, subjects such barrier to a doubt; or at least indicates the possibility of the sewage finding its way to the underlying water. It seems, therefore, that the only safe cesspool in a community that uses the underground water as its source of supply is the cemented water-tight one. And this should be emptied when full by removing the contents to a distance.

It has been proved that sewage from cesspools will in time percolate over 200 feet horizontally, and as time goes on the area of infection probably steadily increases.

2. *"If so, how many a cesspool be constructed so as to be sanitarily safe?"*

This second question is a pertinent one, in that the cesspool seems to be a necessity in the towns and cities that are without a sewage system, for the modern house requires some system of sewage disposal. This may be accomplished by the construction of a water-tight cesspool from 4 to 6 feet wide and 8 to 10 feet deep, with several drains of perforated tile near the top and running in different directions and placed immediately below the frost line. Such a cesspool would operate in the nature of a septic tank, much of the organic material being broken up by anaerobic bacterial action, the liquid portion of the sewage draining away through the perforated tile drains, making a system of subirrigation for grass, trees and plants.

This would ordinarily render the water-bearing stratum safe from pollution, but some instances are on record where even this has failed.

3. "*Should abandoned wells be used as cesspools?*"

The use of abandoned wells as cesspools is an extremely dangerous practice, as the sewage is discharged directly into the water-bearing stratum. This should never be permitted if there are other wells in the vicinity, or even at a distance, if they penetrate the same stratum. Even though there be no other wells at the time sewage is turned into an abandoned well, in subsequent years wells may be bored and the lives of many persons endangered through ignorance of this contaminating well.

4. "*What are the dangers, if any, from the open-vault cesspool?*"

The dangers from the open vault cesspool include all those of the deep cesspool, and in addition thereto it affords a breeding- and feeding-place for the house fly, and the very great and real danger of flies carrying infection from such places to articles of food and drink. It is true that the distance to ground-water is greater and therefore a greater degree of filtration purification is obtained than in the deep cesspool, but, on the other hand, the opportunities of direct infection by the fly are so great and numerous as to very greatly outweigh the evils of the pollution of the water. In many of the smaller towns of this State [Kansas] the cesspool is coming to be a very serious menace to the health of the community. During the past year there is good reason to believe that several instances of local epidemics of typhoid fever were due to the pollution of the common ground-water supply by the discharge of the contents of cesspools directly into the water-bearing stratum. **Individuals and communities are warned of the danger of this practice, and cities are urged to pass such ordinances as will at least regulate cesspools in accordance with the above suggestions.**

The same warning applies with equal force to California, and it is most encouraging that all over the State citizens are asking themselves these same questions that have been a subject for consideration in Kansas.

SMALL SEWAGE DISPOSAL WORKS.

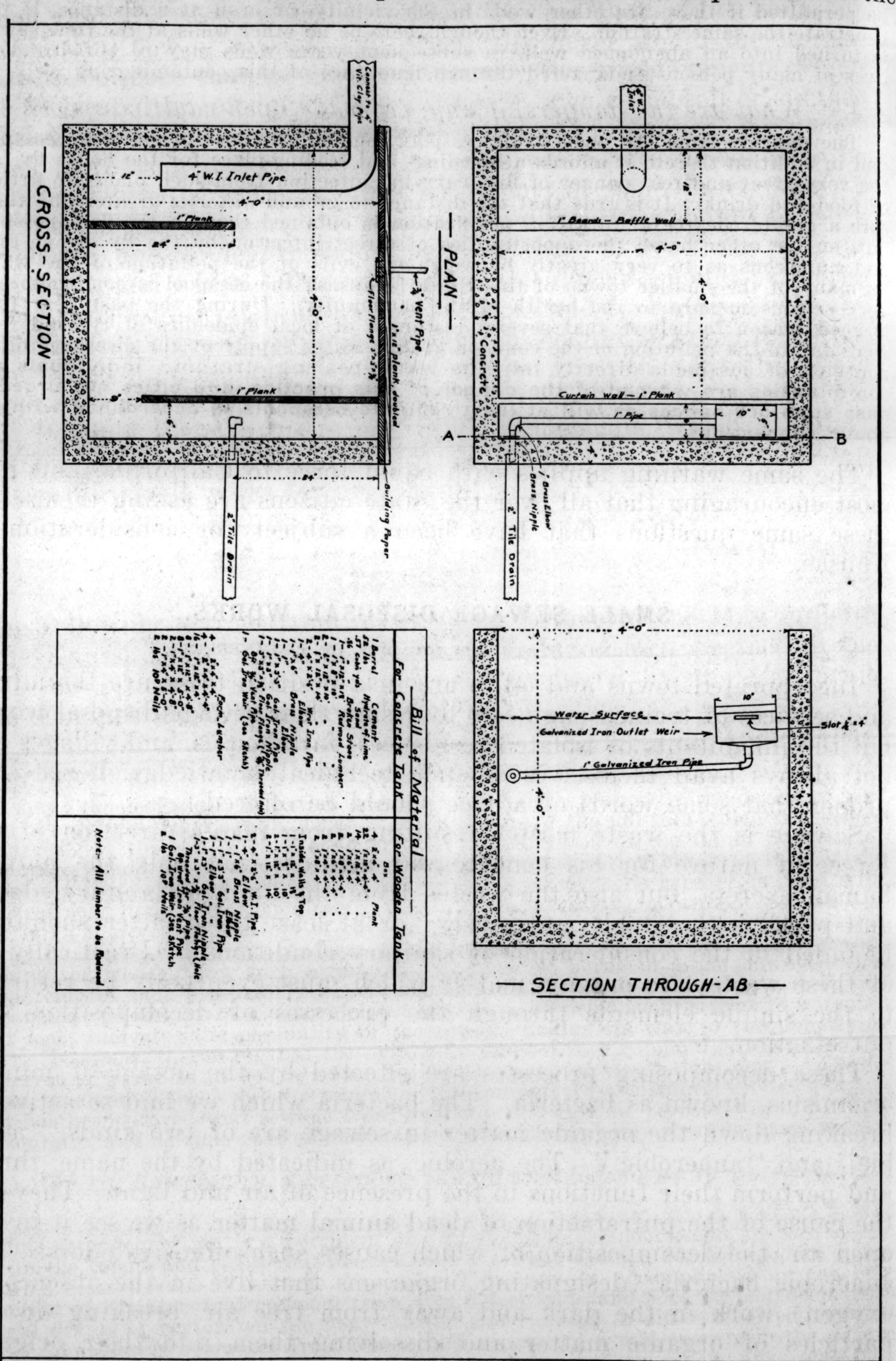
CALIFORNIA STATE DEPARTMENT OF ENGINEERING.

Incorporated towns and cities are in a position to secure the advice and services of trained engineers to design their sewage disposal works, but the inhabitants of isolated residences, farmhouses, and villages can not always avail themselves of such technical knowledge, hence it is proper that some words of advice should be offered.

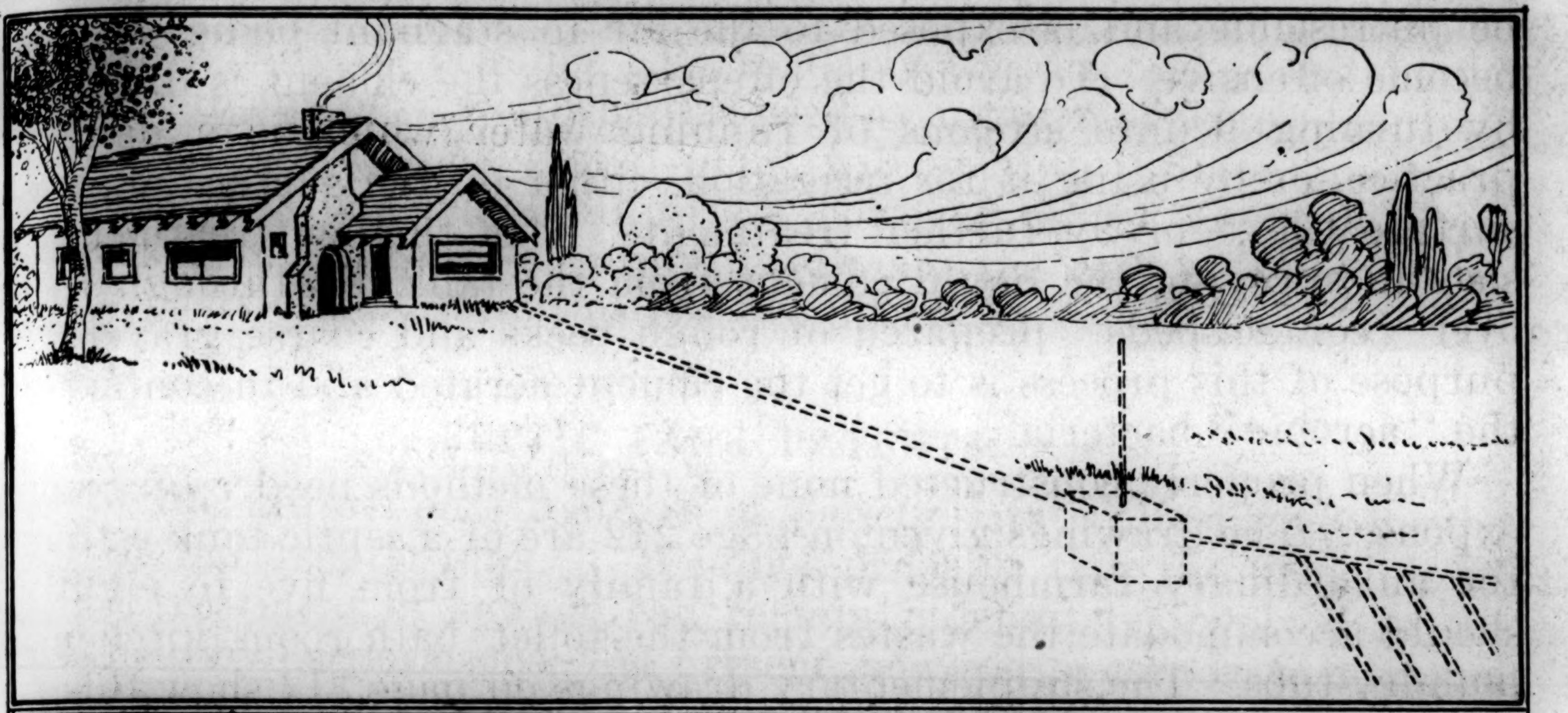
Sewage is the waste matter resulting from man's direction of the forces of nature for his benefit, and includes, not only the natural human excreta, but also the wastes from the kitchen, laundry, dairy, and perhaps the stable and pigsty (or at least these latter should be included in the consideration of sanitary conditions.) Practically all of these wastes are organic matter which must eventually be returned to the simple elements through the processes of decomposition and putrefaction.

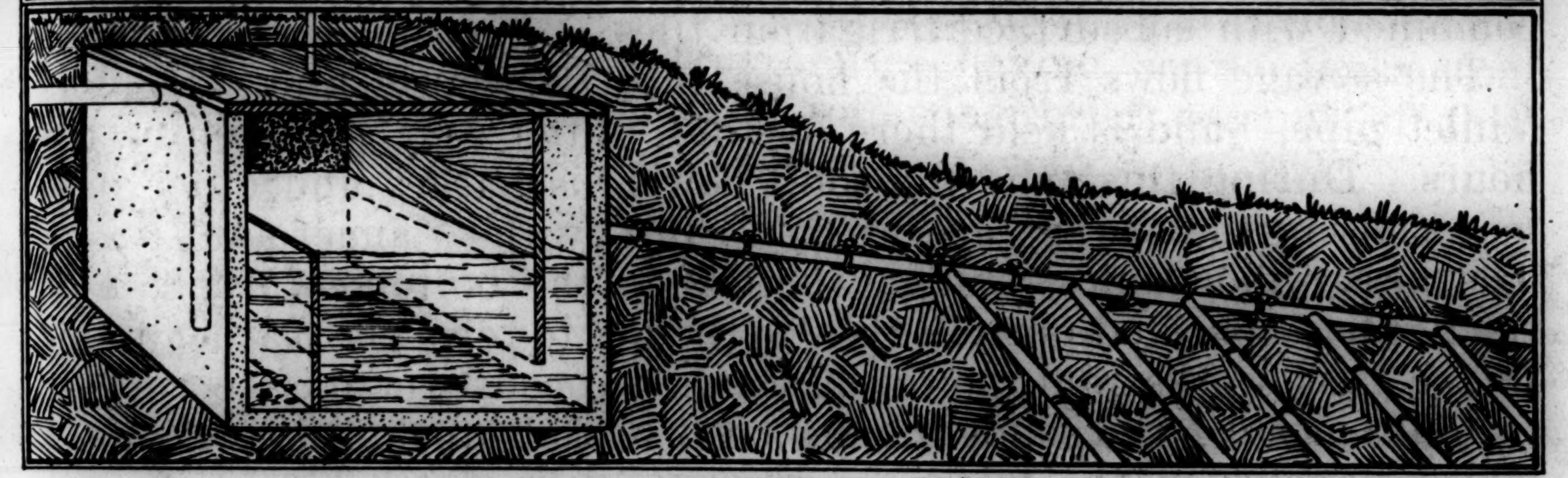
These decomposing processes are effected by the action of minute organisms, known as bacteria. The bacteria which we find so active in breaking down the organic matter in sewage are of two kinds, "aerobic" and "anaerobic." The aerobic, as indicated by the name, thrive and perform their functions in the presence of air and light. They are the cause of the putrefaction of dead animal matter as we see it in the open air, the decomposition of which causes such offensive odors. The anaerobic bacteria (designating organisms that live in the absence of oxygen) work in the dark and away from free air, breaking up the particles of organic matter and dissolving them into their original elements.

It has been found that where sewage is collected in a tank where proper conditions obtain, after a few hours the anaerobic bacteria have attacked the solid matter and separated the constituents. The inorganic matter falls to the bottom while most of the organic matter is dissolved into fluid and gaseous forms. That which has not been dissolved is broken up into fine particles and held in suspension in the



liquid. A "scum" forms on the surface of the liquid in the tank which soon becomes dense enough to shut out light and free air. As these conditions become established the anaerobic bacteria acquire their greatest activity. The period required for maximum effect varies with the quality of the sewage, temperature, and other conditions, and ranges from, say, six to twenty-four hours, but eight to sixteen hours is the usual time for ordinary house refuse.





Any person may obtain a quotation in his own community on the materials listed above. To this estimate he has only to add the cost of labor. Cut "A" shows the general arrangement of a septic tank in relation to a farm house or country residence. It also shows the subsoil irrigation method of disposing of the effluent. Cut "B" shows a scale drawing of this septic tank.

Bill of Material for the Construction of the Above Septic Tank.

For Concrete Tank.

	Cost.
1 barrel cement	$
52 lbs. hydrate of lime	
57/100 cubic yard sand	
86/100 cubic yard broken stone	
1 piece 1"x12"x18' lumber	
1 piece 1"x 8"x10' lumber	
2 pieces 1"x12"x10' lumber	
2 pieces 1"x12"x14' lumber	
2 lengths "2x2' 6" wrought iron pipe	
1 4" elbow	
1 1"x6" brass nipple	
1 1" elbow	
1 length 1"x3' 3" gal. iron pipe	
1 1"x3" gal. iron nipple	
1 3"x3"x⅜" floor flange (¾" threaded hole.)	
8 feet ¾" vent pipe	
1 gal. iron weir (see sketch)	
(Form Lumber.)	
4 pieces 2"x 4"x4'	
4 pieces 2"x 4"x4' 4"	
16 pieces 1"x12"x4'	
8 pieces 1"x12"x4' 8"	
8 pieces 1"x12"x5'	
2 pieces 1"x 4"x4' 8"	
2 pieces 1"x 4"x5'	
2 lbs. 10D. nails	
Total	$

For Wooden Tank.

Box.

	Cost.
4 pieces 2"x 4"x4' plank	$
22 pieces 1"x12"x4' 4" plank	
14 pieces 1"x12"x4' plank	
2 pieces 1"x 6"x4' plank	
2 pieces 1"x 8"x4' 4" plank	
2 pieces 1"x 6"x4' 4" plank	
2 pieces 1"x 4"x4' 4" plank	
2 pieces 1"x 8"x4' plank	
Inside Walls and Top.	
1 piece 1"x12"x18'	
1 piece 1"x 8"x10'	
2 pieces 1"x12"x10'	
2 pieces 1"x12"x14'	
Other items as scheduled in left-hand column	
Total	$

NOTE.—All the above lumber to be of redwood.

The action, called "septic," does not completely dissolve the matters contained in the sewage, but under proper conditions should destroy 40 to 60 per cent of the organic matter, leaving the remainder suspended in a fine divided state. The effluent from the tank will, therefore, be putrescible and if exposed to the air in stagnant bodies will soon become offensive. To avoid the offensiveness the effluent is disposed of by turning it into streams of running water which is a dangerous practice, or by using it for irrigation, either on the surface or in subsurface tiles,* or by further treatment. This further treatment consists in spraying the liquid effluent from the tank out through the air over "contact-beds" prepared of rough rocks and coarse gravel. The purpose of this process is to get the effluent aerated and in contact with the "aerobic" bacteria.

When properly constructed none of these methods need require much expense. The drawings given on page 212 are of a septic tank estimated for an ordinary farmhouse with a family of from five to eight. It should accommodate the wastes from the toilet, bath room, kitchen and laundry-tubs. The supplementary drawings on page 213 show this tank combined with subsurface irrigation tiles.

The sewage flows from the house into the septic tank through the "inlet pipe," and is held there by the "outlet weir" for ten or twelve hours. During this time the solid bowel-discharges and other organic materials in the sewage are worked over by the "anaerobic" bacteria. The heavy inorganic "sludge" settles to the bottom of the tank and the lighter separated portion rises to the top to form the leathery "mat." If the tank works well, however, these two constituents are very small in bulk, most of the solids having been broken up into gases, materials which dissolve in the water, and very finely divided particles which remain suspended in the water and pass out with the effluent.

The tank shown in the diagram is constructed of concrete, but figures are given for materials to construct it of redwood.

The "soil pipe" from the house should be 4-inch vitrified clay, bell and spigot-jointed pipe. The cementing of these joints is specially important in the vicinity of trees and rose bushes, as their roots will utilize every opportunity to wedge into the joints. The outlet-weir is a simple device so arranged as to permit a constant discharge regardless of the intermittent inflow of the sewage from the house. If subsoil irrigation is planned, the effluent should be carried in loose jointed 2-inch tiles placed 12 to 18 inches below the surface and having a fall of from 2½ inches to 3 inches to 100 feet. In sandy soil the distributing pipes should total approximately 200 feet, in less absorbent soil the amount of distributing pipes must of course be increased.

The tank does not require a roof. Though one may be provided as a matter of safety or appearance. Successful tanks have often been operated for six or eight years without being opened, though the majority of them accumulate enough heavy sludge in three or four years to make it desirable to clean them out. The sludge so removed may be readily disposed of by spading it into adjacent ground. The Kansas Board of Health in a similar discussion of the subject, previously referred to, states, "Particularly for those parts of the State where the rainfall is so small that the water of the sewage, as well as its fertilizing constituents, has an appreciable value, the disposal scheme outlined above may have a considerable economic as well as sanitary value. It is quite possible by this method to maintain in the dryest region a large, well fertilized, and well-watered lawn. The process should be carried on entirely without odor, though, of course, the septic tank should be located some little distance from the house—say a hundred feet or more, if possible. Particularly the disposal plant should not be near to any open well which is used as a source of water supply.''

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* Subirrigation is not successful, however, unless the soil is of a sandy, porous nature.

The expense of this suggested plant will vary in different parts of California. Any one can obtain prices, however, on the materials given in the diagram, and can accurately estimate the cost in his locality. In many parts of the State this cost would not exceed $25 to $30.

SEPTIC TANK PATENTS.

One of the unfortunate features of patent laws is illustrated by the history of the ''septic tank.'' It is not probable that the principle of ''septic'' treatment of sewage can remain indefinitely involved in the patents held by corporations. At present, however, a corporation known as the Cameron Company is bringing a number of suits in various states to recover fees and royalties from cities having septic tanks for infringement of their patents. The following brief account of this matter is taken from *Municipal Engineering,* vol. 35, p. 290:

> The original septic tank patents were granted in England, 1894 and 1895, to Mr. Donald Cameron. The first of these expired in November, 1909. A United States patent was granted to Mr. Cameron in October, 1899, and expired November, 1909, unless the present congress shall extend it. The patents have generally been disregarded by municipal engineers and attorneys because they believed the so-called "septic process" was not patentable. One attorney facetiously remarked that if the Cameron patents were sustained he should endeavor to get a patent on the process of drying clothes by hanging them on a line.
>
> In this frame of mind, a great many towns and cities proceeded to build and operate septic tanks for the disposal of their sewage. Finally, the Cameron Septic Tank Company brought suit against the town of Saratoga Springs in New York and the town got a decision in the U. S. Circuit Court. Later the decision was reversed by the U. S. Circuit Court of Appeals. The U. S. Supreme Court refused to consider an appeal so that the decision against the town stands. The decision defines the septic process as one where the sewage is subjected to bacterial action in the absence of air and light until the organic solids contained in it are liquefied.
>
> The Cameron Company, on the strength of this decision, has taken up the question of royalties with most of the cities using the septic process. In most cases it is cheaper to pay the royalty demanded than to fight a suit in the courts. Without some organization these towns would be at the mercy of the company, irrespective of the justice of their claims. Two or more septic process protective associations have been formed in the East to defend their members against suits by the Cameron Company. Fresno City is defendant in a suit now pending for license fees and royalties claimed by the Cameron Company.

It will be of considerable interest to note what action congress will take in the matter of patent extensions.

The Cameron Company have an office in the Monadnock building, San Francisco, and have instituted suits against several California cities, as mentioned above. The California League of Municipalities has organized to carry the matter through the courts to a definite decision for California. The announcement of the League is as follows:

LEAGUE OF CALIFORNIA MUNICIPALITIES.

San Francisco, Cal., March, 1910.

To the Mayors and members of city councils and boards of trustees of the cities and towns, and officers of sanitary districts, in the State of California.

GENTLEMEN:—The College Park Sanitary District, located near San Jose, was recently sued for infringement by the Cameron Septic Tank Company of Chicago. Subsequently suit was brought against the city of Fresno, and the cities of Santa

Cruz, Los Gatos, and East San Jose were notified to pay the royalty demanded or also stand suit.

City Attorney Osborn of Santa Cruz, one of the committee appointed at the last convention of the League of California Municipalities on the joint defense of patent suits, immediately took the matter up with the officials of the league and a meeting was held on January 3, 1910, in the Federal Building in San Francisco. The proceedings of that meeting with the names of those in attendance, together with the proceedings of the subsequent meeting held in San Jose on January 8th, was published in the January number of Pacific Municipalities, pages 161, 162 and 163.

The third and last meeting of the committee was held at San Jose on Tuesday, March 1, 1910. Attorney Petree of the Cameron Septic Tank Company again addressed the meeting, but did not offer any terms for settlement which the committee would accept. It was then decided to address a letter to all the incorporated cities and towns in California and also the sanitary districts, asking for a small contribution to pay the cost of a thorough legal investigation by patent law specialists.

The exact status of the litigation on the mater is as follows:

A patent was granted in England to Donald Cameron and others, on November 8, 1895, for a PROCESS of and APPARATUS for the disposal of sewage. Subsequently patents were taken out in the United States and other foreign countries.

A plant for sewage disposal was constructed at Saratoga Springs, New York, and put in service July, 1903; it was built after the Cameron idea and worked perfectly. On March 12, 1907, the Cameron Company brought suit for infringement against the village of Saratoga Springs, in the Circuit Court, N. D. New York, and a decision was rendered declaring the Cameron patent void. The court said in part:

> "The process claims for liquefying sewage by anaerobic action are for an aggregation of three separate and successive processes, two of which were old, and the other a process of nature not patentable, and which had, moreover, been previously discovered and utilized by others. The apparatus claims, which cover a settling tank, and an aerator, disclose nothing which was not known and used in the prior art, except perhaps, an improvement in the outlet of the septic tank, which involved no invention." 161 Fed. Rep. 242.

The Cameron Company appealed, and on January 7, 1908, the Circuit Court of Appeals, Second Circuit, reversed the lower court on the process claims but sustained it as to the apparatus claims, saying in part:

> "As to the process claims, the essential feature of which is the securing of the separate and successive action of anaerobes and aerobes on the organic matter of the solids in a flowing current of sewage * * * discloses a patentable invention in the discovery and utilization of a process of nature for a practical purpose. The apparatus claims, which cover the arrangement of the series of tanks, disclose nothing broadly new and are void for lack of novelty." 159 Fed. Rep. 453.

This is known as a process patent, and in the last decision the court said:

> "The essential features of Cameron's process are separate and successive action of anaerobes and aerobes on the organic matter of the solids in a flowing current of sewage. It is this method of dividing the process which complainant claims to be novel." 159 Fed. Rep. 459.

In the case of *Kennedy* vs. *Solar Refining Company*, 69 Fed. Rep. 715, it was held that

> "A claim to an art or process is not infringed except by the use of all of the steps or their equivalents, and in the order stated."

Many towns are using septic tanks only, discharging the liquefied matter directly from the tank into a stream. According to the language of the court it would appear that there is no infringement unless the entire process is used whereby the sewage is first subjected to the action of anaerobic and then spread out in the light and air to the action of the aerobic microbes. It is the process securing "separate and successive action of the anaerobic microbes and aerobes" that was declared patentable.

The matter of damages is another very uncertain question, the Company recovering no damages in the Saratoga Springs case.

Now then the situation is just this: The Cameron Septic Tank Company have commenced suit in several towns in this State, demanding a royalty of $250.00 and upwards in each case. They intend proceeding against all other towns having septic tanks. The proposition of this committee is to collect an amount of money from the cities and towns, in proportion to population, sufficient to secure the legal opinion from one of the best firms of patent lawyers on the coast, and subsequently, if deemed advisable, to contest the company's claims in court. Therefore all towns having septic tanks and those contemplating their installation are hereby requested to contribute to the required defense fund in proportion as follows:

Cities of less than 1,000 population	$10 00
Cities from 1,000 to 3,000 population	20 00
Cities from 3,000 to 10,000 population	30 00
Cities from 10,000 to 30,000 population	40 00
Cities from 30,000 to 50,000 population	60 00
Cities of more than 150,000 population	60 00

Reports of the amounts received and disbursed, and of all other matters pertaining to the question will be published from time to time in Pacific Municipalities and a copy sent to all towns contributing. Kindly acknowledge receipt of this communication and let us know what attitude your town will take in the matter.

Address all communications, checks, warrants, etc., to the Secretary of the League of California Municipalities, Suite 904, Pacific Building, San Francisco.

Yours truly,

COMMITTEE ON DEFENSE OF CAMERON SEPTIC TANK SUITS.
H. R. Osborn, City Attorney, Santa Cruz.
W. G. Fitzgerald, Mayor of Gilroy.
Judge B. E. Burns, Trustee, Mountain View.
Frank Kauke, City Attorney, Fresno.
P. G. Sheehy, City Attorney, Watsonville.
Percy V. Long, City Attorney, San Francisco.
Raymond Benjamin, Chief Deputy Attorney General of California.
R. R. Bell, City Attorney, Los Gatos.
G. W. Waldorf, City Attorney, East San Jose.
C. E. Moore, City Engineer, Santa Clara.
H. A. Mason and W. J. Locke, of the League of Municipalities.

Associated with the committee are:

F. B. Wise, Frank Brown, and P. R. Wright of the College Park Sanitary District; Arthur E. Free, District Attorney, Santa Clara County; and George Clark, Assistant United Shates District Attorney.

MAYOR'S OFFICE, RIVERSIDE, CAL., March 16, 1910.

I hereby approve and indorse the action taken by this committee in accordance with the foregoing statement.

S. C. EVANS,
President of the League of California Municipalities.

CAMP AND TEMPORARY-RESIDENCE DEVICES FOR SEWAGE AND GARBAGE DISPOSAL.

There are three classes of wastes to be disposed of in a camp or a house having no sewerage system. In order of danger these are: 1, the human excreta; 2, the kitchen slops; 3, the dry garbage (tin cans, clothing, etc.).

1. *Human excreta.*—The "dry-earth" closet is the safest and often the most convenient method. It consists of a seat so arranged that a bucket may be placed under it, and a powdered earth tank placed above it with a slide-door to permit dry-earth to fall into the bucket after each use. The dry-earth contains soil bacteria which break up the bowel discharges into their inorganic constituents. The earth also absorbs the moisture and odors. Each day the bucket contents may be spaded into some convenient ground, where the soil bacteria continue their work to completion.

There are many modifications of the dry-earth closet in use, but the same principle obtains in all of them. One ingenious farmer in California built a concrete pit, over which he placed the ordinary toilet building on a bar hinge. He places straw and kindling in the bottom of the pit and at semi-weekly intervals tips back the building and adds enough coal oil to start a brisk fire. The contents of the pit are rapidly cremated and the preparations are easily made for the next incineration. There is no odor, little expense of labor or money and no danger of contamination of underground waters or of table foods through flies.

2. *The kitchen slops.*—These are a source of attracting flies and providing breeding places for mosquitoes. A very simple and inexpensive plan of camp disposal consists in excavating a pit in porous soil, and providing a small horizontal tunnel at the base of each wall (the small

boy in camp is delighted to have some "official" digging to do). The pit should be filled with some large rough rocks, sticks and brush and a 6-inch top mat of pine needles or other finely divided material. The pit should be surrounded by a frame covered with fine mesh cheese cloth. If a kitchen cullender is used and potato peelings and similar coarse refuse is screened out and burned in the camp fire ashes each day, the rest of the slops will take care of themselves in the "slop pit" without odor or other inconvenience. A pit 3 feet by 3 feet by 3 feet in good soil will provide for a camp of 6 to 10 people.

3. *Dry garbage.*—Destruction by fire at frequent intervals is the most practical and safest method of disposal. A fire crate is easily constructed from interlaced window-protection wire, or a stone fire grate is readily made in any location.

Such sanitary devices are simple and inexpensive to provide either for a farmhouse or a camp, but they will not operate themselves. Unless some one makes it his duty to spend a half hour daily attending to them, they will fail. Such devices operated carefully and used by every member of the camp will insure safety, freedom from flies, odors and unsightly "spots."

The bulletin for May will be devoted to "taking a vacation," and these suggestions will be repeated with illustrations. The subject is mentioned at this time because many summer resorts and industrial camps are now beginning to prepare for the approaching season. One infected open toilet accessible to flies, and polluting through underground seepage the spring water for a mountain resort may be the source of infecting a continuous line of transient boarders from every part of the State, or even from every part of the world.

THE SEWAGE PROBLEM AND THE LAW.

William F. Snow.

California's sewage problem presents an interesting study. In 1900, 52.4 per cent of the population lived in forty cities of over 2,500 inhabitants each. Of the remaining 47.6 per cent a considerable number lived in sixty towns of sufficient size to be incorporated, and a smaller number lived in villages. Since 1900 the number of incorporated towns has increased to 200, and many additional unincorporated communities have been built up. It is desirable that the health of all this urban population should be safeguarded by the installation of adequate sewage-disposal systems. At the present time many of these cities and towns are situated on important watersheds of the State and sewer directly into rivers. Some of them are crossed by great irrigating ditches into which much of their sewage and garbage finds its way. Others sewer directly into the Pacific Ocean, or one of the salt-water bays. A few are situate on fresh-water lakes. Finally, many of the smaller cities have developed in the great level valleys of the State far from any surface-water course, but only a few feet vertically above water-bearing gravels, into which both wells and cesspools have been plentifully dug by uninformed citizens.

Californians love their mountains and from May to September they fill the great canyons at the head-waters of all the rivers with populous camps of a constantly changing citizenship. The lumber and mining industries provide many other summer cities on the banks of the mountain streams.

The long dry summer months, followed by the heavy autumnal rains that wash suddenly the accumulated débris and sewage of the creek beds into the rivers, presents a problem very different from that of a state in which frequent summer storms drench the watersheds and flush the creeks. The flooding of various sections of the State by rivers overflowing their banks and levees is a frequent occurrence. The steamer traffic on the great water-ways of the State—notably the San Joaquin and Sacramento rivers—is an important factor in the sewage-pollution problem. The "intake" pipe of one river community of 1,000 inhabitants is passed daily by a floating population of more than 600.

The long dry season mentioned precludes in California the use of cisterns for rain water. Consequently, the domestic water supplies are from shallow and deep artesian wells, springs, rivers, open ditches, and pipe-line supplies from mountain watersheds, and a few lakes. Shallow wells and the rivers supply the majority of citizens, but each of the other sources is widely utilized. There are many instances of serious pollution of water supplies in all these classes. California's population is rapidly increasing, and every effort should be made to prevent further pollution of the water supplies. The State Board of Health is exerting the extent of its authority to remove the sources of pollution already existing.

There are certain factors which operate to reduce the probable danger from all these sources of water-pollution. The rivers of the State are low in volume and run very sluggishly during the summer, the absence of rains precludes pollution except by materials directly discharged into them. The larger streams receive so much fine silt that a steady sedimentation goes on throughout their flow through the valleys. This "muddy" condition also leads to more or less effective filtration plans for the majority of users. In winter the volume of rain and melted snow water is very great compared to the amount of present pollution. Many of the surface-well waters contain such a high percentage of "temporary hardness" that all water used for drinking and cooking is boiled to "soften it," and this effectively reduces the danger from contamination.

California to-day stands on the threshold of her water and sewage problem. Her promotion committees are advertising the wonderful agricultural and commercial resources of the State, and are bringing in thousands of new citizens each year. These new citizens will repeat the pollution tragedies of the Hudson, the Ohio or the Mississippi watersheds, which were enacted by their ancestors at a time when science could not offer a warning, or they will build wisely in accordance with our laws and our examples. It is "up to California" to make its demands upon them.

The State law covering the pollution of water supplies is extremely rigid in California, but it lacks adequate machinery for enforcement. Without compulsion, however, the energetic citizens of many sections of the State have taken up the situation and are devising ways and means to meet it. The following extracts from the State law prove that the California legislature after careful reconsideration of the Public

Health Act, in 1907 and 1909, decided that the principle of proper sewage-disposal was important to the health of the people:

1. Public health act of March 23, 1907.

SECTION 1. This act shall be known as the Public Health Act and its provisions are to be liberally construed, with a view to effect its purpose of preventing by uniform measures, the spread of contagious, infectious and communicable diseases and to preserve and promote the health of the people of the state. Its provisions are not intended to repeal or supersede any statutes of the state now in force, which are promotive of the general health and not in conflict with or repugnant to its provisions, but they shall be deemed supplemental to such statutes; and where the provisions of this act are not in conflict with and repugnant to such statutes, they shall be construed consistently therewith, and as continuations thereof.

SEC. 2. It shall be unlawful to discharge or deposit, or cause or suffer to be discharged or deposited, any sewage, garbage, feculent matter, offal, refuse, filth, or any animal, mineral, or vegetable matter or substance, offensive, injurious, or dangerous to health, in any spring, streams, rivers, lakes, wells or other waters used or intended to be used for human or animal consumption; or to discharge or deposit, or cause or suffer to be discharged or deposited, any such offensive, injurious or dangerous matter or substance upon the land or place adjoining such waters so as to cause or suffer such matter or substance to flow or be emptied or drained into such waters.

SEC. 3. It shall be unlawful to erect, construct, excavate, or maintain, or cause to be erected, constructed, excavated, or maintained, any privy, vault, cesspool, sewer pipes or conduits, or other pipes or conduits, for the discharge of impure waters, gas, vapors, oils, acids, tar, or other matter or substance offensive, injurious, or dangerous to health, whereby any part of such matter or substance shall empty, flow, seep, drain, condense or otherwise pollute or affect any of such waters so intended for human or animal use or consumption; or to erect or maintain any permanent or temporary house, camp, or tent, so near to such springs, streams, rivers, lakes, or other sources of water supply, as to cause or suffer the drainage, seepage, or flow of impure waters, or any other liquids, or the discharge or deposit therefrom, of any animal, mineral, or vegetable matter, to corrupt or pollute such waters.

SEC. 4. It shall be unlawful to cause or permit any horses, cattle, sheep, swine, poultry or any kind of live stock or domestic animals, to pollute the waters, or tributaries of such waters, used or intended for drinking purposes by any portion of the inhabitants of this state.

SEC. 5. No person shall bathe or wash clothes in any spring, stream, river, lake, reservoir, well or other waters which are used or intended for drinking purposes by the inhabitants of the vicinage or of any city, city and county, or town, of this state.

A great deal of ice is used for domestic purposes in California, and also for shipping fruit and other produce to the Eastern States. The act of 1907 therefore includes the following regulations concerning the pollution of ice.

SEC. 6. Ice offered or intended for public use or consumption shall be kept or stored in clean places free from all filth, offal, refuse, and polluted waters, and separate and removed from contact with animal or vegetable matter, and not in proximity to any cesspool, privy, vault, or sewer, nor in places where such ice may be subject to contamination from, or the action of, acids, oils, noxious, offensive, or injurious gases, smoke or vapors, and all ice kept or stored in violation of this section shall be deemed polluted ice and not fit for human consumption; and it shall be unlawful to sell, offer for sale, or store for sale such polluted ice.

SEC. 7. It shall be unlawful to sell, offer, or keep for sale for public use or consumption, ice which shall have been used for the cooling of malt, vinous or spirituous liquors, or for the refrigeration of butter, milk, meat or any animal or vegetable matter or substances, or which shall have been taken from any asylum, hospital, sanitarium, sick room, slaughterhouse, or any place where human or animal remains have been kept or deposited.

SEC. 8. In the transportation or carriage of ice intended for public use or consumption, care shall be taken to prevent contact with filth, offal, and other refuse, and contamination from animal and vegetable matter, and from offensive and noxious oils, acids, and other substances injurious, dangerous or offensive to health.

SEC. 9. No person, firm, company, or corporation shall make or permit to be made, or offer or permit to be offered for sale for public use or consumption, any ice manufactured from impure or polluted water, or natural ice cut or taken from any corrupt or impure waters or water source; nor taken or manufactured from any waters or source of water supply after notice from the state board of health, or its secretary, that such waters are impure or polluted.

In 1909 the legislature added the following acts relating to river traffic, and to the abandonment of carcasses of dead animals on the banks of water supplies or on public property:

4. Acts and code sections relating to contamination of streams.

SECTION 1. It shall be unlawful for the owner, tenant, lessee or occupant of any house-boat or boat intended for or capable of being used as a residence, house, dwelling or habitation, or for the agent of such owner, tenant, lessee or occupant to moor or anchor the same or permit the same to be moored or anchored in or on any river or stream, the waters of which are used for drinking or domestic purposes by any city, town or village within a distance of two miles above the intake or place where such city, town or village water system takes water from such river or stream; *provided, however,* that in the transportation of any such house-boat on any such river or stream nothing herein contained shall prevent the owner, agent, tenant or occupant of such house-boat from mooring or anchoring the same when necessary within the limits herein fixed and established; *provided,* such house-boat shall not remain moored or anchored within such limits for a longer period than one day.

It shall be unlawful for any person to erect, construct, excavate or maintain on or near the banks of any river or stream and within two miles above the intake of any water supply used for domestic or drinking purposes in any city, town or village any privy, vault, cesspool, sewer pipe or conduit which shall cause or suffer to be discharged into said stream or river any sewage, garbage, feculent matter, offal, filth, refuse, or any animal, mineral or vegetable matter, or substance offensive, injurious or dangerous to health.

The law provides that these serious offenses are misdemeanors, punishable on conviction by fines varying from $25 to $1,000 or by imprisonment from not to exceed one year, or by both fine and imprisonment. Extracts of the penalty laws follow:

Penalty for pollution of streams by landowners, towns, or corporations.

Every person who puts the carcass of any dead animal, or the offal from any slaughter pen, corral, or butcher shop into any river, creek, pond, reservoir, stream, street, alley, public highway, or road in common use, or who attempts to destroy the same by fire within one fourth of a mile of any city, town, or village, except it be in a crematory, the construction and operation of which is satisfactory to the board of health of such city, town, or village; and every person who puts any water-closet or privy, or the carcass of any dead animal, or any offal of any kind, in or upon the borders of any stream, pond, lake, or reservoir, from which water is drawn for the supply of any portion of the inhabitants of this state, so that the drainage of such water-closet, privy, carcass or offal may be taken up by or in such stream, pond, lake, or reservoir; or who allows any water-closet, privy, or carcass of any dead animal, or any offal of any kind, to remain in or upon the borders of any such stream, pond, lake, or reservoir within the boundaries of any land owned or occupied by him, so that the drainage from any such water-closet, privy, carcass, or offal, may be taken up by or in such stream, pond, lake, or reservoir; or who keeps any horses, mules, cattle, swine, sheep, or live stock of any kind, penned, corraled, or housed on, over, or on the borders, of any such stream, pond, lake, or reservoir, so that the waters thereof become polluted by reason thereof; or who bathes in any such stream, pond, lake, or reservoir; or who by any other means fouls or pollutes the waters of any such stream, pond, lake, or reservoir, is guilty of a misdemeanor, and upon conviction thereof shall be punished as prescribed in section three hundred and seventy-seven. [Penal Code, Sec. 374, as amended in 1907.]

Every person, firm, association, or corporation which shall discharge or deposit, or shall cause or suffer to be discharged or deposited, or to pass, in or into the waters of any navigable bay, or river, in this state, any coal tar or refuse or residuary product of coal, petroleum, asphalt, bitumen, or other carbonaceous material or substance is guilty of a misdemeanor, and for each offense is punishable by imprisonment in the county jail for not exceeding one year, or by fine not exceeding one thousand dollars, or by both such fine and imprisonment. [Penal Code, Sec. 374½. See, also, Public Health Act, sections 2 to 9.]

Penalty for pollution of streams by house-boats.

SEC. 2. Any person who violates any of the provisions of section 1 of this act [anchorage of house-boats, etc.] is guilty of a misdemeanor. Each day's violation of any of the provisions of said section 1 shall constitute a separate and distinct offense.

SEC. 3. Any privy, vault, cesspool, sewer pipe or conduit erected, constructed, excavated or maintained on or near the banks of any river or stream within two miles above the intake of any water supply used for drinking or domestic purposes in any city, town or village, which shall cause or suffer to be discharged therefrom sewage, garbage, feculent matter, offal, refuse, filth or any animal, mineral or vegetable matter or substance, offensive, injurious or dangerous to health into such river or stream, and any house-boat or boat intended for or capable of being used as a residence, house, dwelling or habitation, which shall for more than one day be moored or anchored in or upon any river or stream within two miles above the intake of any water supply used for domestic or drinking purposes in any city, town or village are hereby declared to be public nuisances; and it is hereby made the duty of any and all sheriffs, constables, policemen and health officers to immediately abate said nuisance.

SEC. 4. This act shall take effect immediately. [Enacted March 6, 1909, Statutes of 1909, page 140.]

Penalty for the manufacture or sale of polluted ice.

SEC. 10. In the interest of the public health, every health officer or health inspector, upon proper demand and notice of his authority, shall be permitted, during office hours, to enter and inspect the works, premises, sources of supply, and places of storage of any person, firm, company, or corporation, maintaining, selling or offering for sale, water, or ice for human use or consumption, and it shall be unlawful for any person, firm, company, or corporation to refuse to permit a reasonable inspection or investigation of such works and premises or the ice and water kept or stored therein, or to impede or obstruct such officer during such investigation.

SEC. 21. Any person violating any of the provisions of this act, whether acting for himself, or as the agent or servant of another person, or of a firm, company, or corporation, shall be guilty of a misdemeanor, and upon conviction shall be punished as provided in section nineteen of the Penal Code of the State of California. [Section 19 provides imprisonment not to exceed six months in a county jail, or fine not to exceed $500, or both.]

SEC. 22. This act shall take effect from its passage. [Statutes of 1907, page 983.]

A "Public Nuisances" Act is provided to cover all other health regulations not specifically mentioned. The definition follows:

Anything which is injurious to health, or is indecent, or offensive, to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property by an entire community or neighborhood, or by any considerable number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin, or public park, square, street, or highway, is a public nuisance. [Penal Code, Sec. 370.]

An act which affects an entire community or neighborhood or any considerable number of persons, as specified in the last section, is not less a nuisance because the extent of the annoyance or damage inflicted upon individuals is equal. [Penal Code, Sec. 371. As to definition of nuisances, see, also, Civil Code, sections 3479 to 3484.]

Every person who maintains or commits any public nuisance, the punishment for which is not otherwise prescribed, or who willfully omits to perform any legal duty relating to the removal of a public nuisance, is guilty of a misdemeanor. [Penal Code, Sec. 372.]

Every person who maintains, permits, or allows a public nuisance to exist upon his or her property or premises, and every person occupying or leasing the property or premises of another who maintains, permits, or allows a public nuisance to exist thereon, after reasonable notice in writing from a health officer or district attorney to remove, discontinue or abate the same has been served upon such person is guilty of a misdemeanor, and shall be punished accordingly; and the existence of such nuisance for each and every day after the service of such notice shall be a separate and distinct offense, and it is hereby made the duty of the district attorney to prosecute all persons guilty of violating this section by continuous prosecutions until the nuisance is abated and removed. [Penal Code, Sec. 373*a*.]

No lapse of time can legalize a public nuisance, amounting to an actual obstruction of public right. [Civil Code, Sec. 3490.]

The remedies against a public nuisance are:
1. Indictment or information;
2. A civil action; or,
3. Abatement. [Civil Code, Sec. 3491.]

A private person may maintain an action for a nuisance, if it is specially injurious to himself, but not otherwise. [Civil Code, Sec. 3493.]

A public nuisance may be abated by any public body or officer authorized thereto by law. [Civil Code, Sec. 3494.]

Any person may abate a public nuisance which is specially injurious to him by removing, or if necessary, destroying the thing which constitutes the same, without commiting a breach of peace, or doing unnecessary injury. [Civil Code, Sec. 3495.]

Any health officer or governing board of any city, town or sanitary district, having served written notice upon the owner or reputed owner of real estate upon which there is a dwelling house, and such owner or reputed owner, after thirty days, having refused, neglected or failed to connect such dwelling house, together with all toilets, sinks, and other plumbing therein, properly vented, and in a sanitary manner, with the adjoining street sewer, may construct the same at a reasonable cost, and the person doing said work at the request of such health officer or governing board, has a lien upon said real estate for his work done and materials furnished, and such work done and materials furnished shall be held to have been done and furnished at the instance of such owner or reputed owner, or person claiming or having any interest therein. [Code of Civ. Proc., Sec. 1191*a*, enacted April 19, 1909.]

SEC. 2. Any person violating any of the provisions of this act [relating to public nuisances] shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine of not less than fifty, nor more than five hundred dollars, or imprisonment not more than six months, or by both such fine and imprisonment. [Statutes of 1909, page 400.]

The California State Board of Health is assigned certain duties in relation to water and sewage problems, and is given power to prevent pollution of public domestic water and ice supplies.

It [the State Board of Health] shall cause special investigation of the sources of mortality and the effects of localities, employments, conditions and circumstances on the public health, the preparation and sale of drugs and food and the adulteration thereof.

It must perform such duties as are or may be required by law for the detection and prevention of the adulteration of articles used for food and drink, and for the punishment of persons guilty of violation of any law providing against such adulteration.

It shall examine and have power to prevent the pollution of sources of public domestic water and ice supply.

In the execution of its duties the State Board of Health is given authority over local boards of health and health officers, and is empowered to adopt and enforce rules and regulations.

It shall have power to abate public nuisances. It may advise all local health authorities, and, when in its judgment the public health is menaced, it shall control and regulate their action.

It shall have general power of inspection, examination, quarantine and disinfection of persons, places, and things, within the state, and for the purpose of conducting the same may appoint inspectors, who, under the direction of the board, shall be vested with like powers; *provided* that this act shall in nowise conflict with the national quarantine laws.

It shall have power to commence and maintain all proper and necessary actions and proceedings to enforce its regulations, to enjoin and abate nuisances dangerous to health, to compel the performance of any act specifically enjoined upon any person, officer or board, by any law of this state relating to the public health, and to protect and preserve the public health; also to defend all actions and proceedings involving its powers and duties; and in all such actions and proceedings it shall sue and be sued under the name of the state board of health.

It shall have power to adopt and enforce rules and regulations for the execution of its duties under this section.

Penalty for failure to comply with instructions of the state board of health.

Any person who shall violate or refuse or neglect to conform to any sanitary rule, order or regulation prescribed by the state board of health for the prevention of the pollution of springs, streams, rivers, lakes, wells, or other waters used or intended to be used for human or animal consumption shall be guilty of a misdemeanor. [Penal Code, Sec. 377*b*.]

Any person who shall violate or refuse or neglect to conform to any sanitary rule, order or regulation prescribed by the state board of health for the prevention of the pollution of ice or the sale or disposition of polluted ice offered, kept or intended for public use or consumption, shall be guilty of a misdemeanor. [Penal Code, Sec. 377*c*.]

Every person charged with the performance of any duty under the laws of this state relating to the preservation of the public health who willfully neglects or refuses to perform the same, is guilty of a misdemeanor. [Penal Code, Sec. 378.]

Every willful omission to perform any duty enjoined by law upon any public officer, or person holding any public trust or employment, where no special provision shall have been made for the punishment of such delinquency, is punishable as a misdemeanor. [Penal Code, Sec. 176.]

SEC. 2. Any person who shall violate any of the provisions of this act shall be guilty of a misdemeanor, and, upon conviction, shall be punished by a fine of not less than twenty-five ($25) dollars nor more than two hundred ($200) dollars, or by imprisonment in the county jail for not less than ten (10) nor more than sixty (60) days. [Statutes of 1909, page 402.]

In order that all these statutes may be made effective, each county is required to appoint a county health officer, and a deputy health officer for each community of 500 inhabitants and over, except that incorporated towns may appoint their own health board.

They [the board of supervisors] shall appoint in each county, a health officer, who shall be deemed an employee and not a county officer, and whose duty it shall be to enforce and observe all orders and ordinances of the board of supervisors, pertaining to health and sanitary matters, all orders, quarantine regulations, and rules prescribed by the state board of health, and all statutes relating to the public health and to vital statistics. He shall give to the duties of his office such time and attention as may be necessary to secure general supervision of all matters pertaining to the health and sanitary condition of the county, and when so required by the board of supervisors he shall give all of his time to such duties. He shall be a graduate of a medical college of good standing and repute, shall hold office for a term of one year, and shall receive for his services such sum as may be determined by the board of supervisors.

The board of supervisors of each county must appoint, in each incorporated city or town of five hundred or more inhabitants a health officer, who has all the duties and powers of a board of health and health officer, as specified in this and the two preceding articles. [Pol. Code, Sec. 3062, as amended March 1, 1889.]

It shall be the duty of the board of trustees, council, or other corresponding board of every incorporated town and city of this state, to establish, by ordinance, a board of health for such town or city, to consist of five persons, one at least of whom shall be a practicing physician and a graduate of some reputable school of medicine, and one, if practicable, a civil engineer. The members of the board shall hold their offices at the pleasure of the appointing power. Every local board of health established in this state must:

First—Supervise all matters pertaining to the sanitary condition of their town or city, and make such rules and regulations relative thereto as are necessary and proper, and not contrary to law.

Second—Report to the secretary of the state board of health, at Sacramento, at such times as the state board of health may require:

(*a*) The sanitary condition of their locality.

(*b*) The number of deaths, with the cause of each, as near as can be ascertained, within their jurisdiction, during the preceding month.

(*c*) The presence of epidemic or other dangerous, contagious, or infectious disease, and such other matters, within their knowledge or jurisdiction, as the state board may require.

The expenses of carrying out these provisions of law are made a charge against the respective towns, cities and counties of the State.

All necessary expenses of enforcing this article are charges against the counties, cities, or towns, respectively, for the payment of which the county, ctiy, or town, may levy a per capita tax of not exceeding three dollars, or a property tax of not exceeding one fourth of one per cent yearly until the same is paid. [Pol. Code, Sec. 3063, enacted March 12, 1872.]

The special weakness of the California law consists in its failure to provide any standard of fitness for health officers or members of Boards of Health, or any way whereby the removal of an efficient officer or board may be prevented, except on grounds of incompetency. The law is also defective in that it places large responsibilities on the State Board of Health without requiring the appropriation of funds for carrying out its provisions.

California is fortunate at present in having for governor a man who is deeply interested in these problems, and who is providing the State Board with facilities to complete a comprehensive report on water and sewage within the State. It is anticipated that the next legislature will provide such amendments to the existent laws as may be necessary to procure their adequate enforcement.

COMMENTS.

FARMING SEWAGE FOR AN INCOME.

In California, where water is so valuable for irrigation, the utilization of sewage for broad irrigation should be carefully considered. Some of our cities which operate sewer-farms realize from $500 to $5,000 a year from hay, walnuts, potatoes, corn, alfalfa, eucalyptus wood. A number of cities have entered into long term leases whereby they have paid a certain annual sum to a private landowner to take their sewage. At the time many of the citizens thought the landowner had done a generous thing by the city, but time demonstrated that he had been keen enough to see what the city failed to see—that sewage properly handled could be made to yield a handsome profit. The irrigation of vegetables and low growing fruits, *i. e.*, lettuce, strawberries, etc., with raw sewage, or even with the effluent from septic tanks, is attended with some danger, and should be prohibited as a general measure of safety. On the other hand, there are many crops not open to this objection that require large quantities of water and bring good prices in the California markets. There are probably not more than a dozen inland towns and villages in the State that are so situated that they may not make use profitably of some treatment method for their sewage followed by broad irrigation of a municipal sewer-farm.

TOWN CONSERVATISM VS. STATE LAW.

All communities have the everpresent citizen who says, "I've lived here forty years and haven't heard of any sickness that sewers would have prevented." "My father lived to be 90, and he never had any use for a sewer." "So I guess this proposition of furnishing somebody with a job laying pipe doesn't get my vote."

There is also his counterpart who says, "See here, I wanted sewers ten years ago and nobody would listen to me, so I went ahead and put in a cesspool, and I don't propose now to lose that investment. I'll vote against any bond issue as long as my cesspool works all right. If my neighbor's well gets polluted, that's his lookout, not mine. I don't take any stock in this disease business, anyhow." These men simply operate against the progress and welfare of their own town. The man who is dangerous to the whole State is the one who says, "We need sewers all right, but this proposition of buying a sewer farm and putting in septic tanks and contact beds and such expensive frills is all wrong. We can't afford it. Here is the river, and we will sewer into it. Running water purifies itself, and even if it don't, it's the business of the towns below to get their drinking water from some other source than the river. The State law don't amount to anything. It's a dead letter, anyhow."

Californians are spending from $2,000,000 to $3,000,000 a year because they listen to such arguments. The State Board of Health is doing what it can to take the law out of the "dead-letter" list. There are signs, too, that prove the old era of town-conservatism is giving way to a more altruistic and a truer conception of sanitary truths. Oroville's recent splendid victory for $120,000 sewer bonds is a signal illustration of this. Oroville's duty to her sister cities down the valley was a prominent factor in the campaign.

THE PUBLIC CONVENIENCE STATION.

When cities can be convinced that a hundred, or a five hundred thousand, dollar investment in sewers is a great safeguard to the health of a city, it would seem that the provision of convenient facilities so that every man, woman, and child while on public property might use these sewer safeguards would be a self-evident corollary. The streets as well as the parks and municipal buildings are public property. That "Possession is nine points of the law" is particularly true in defeating the invisible disease-germs that use the body's wastes in transferring themselves from one person to another.

Every city should provide clean public accommodations for the army of transient shoppers, strangers, and vagrants that are continuously passing through its gates. Then it should immediately close all the neglected cesspools and open-pit toilets that so often remain for years after a sewer system has been installed, forgotten by the citizens, but in constant use by this same transient army. It is poor economy to provide for the sewage of ninety-nine citizens and permit that of the hundredth man to be deposited in our midst uncared for. Pasadena has set the example in California for a comprehensive plan to cover this municipal need.

DEPARTMENT OF VITAL STATISTICS.

GEORGE D. LESLIE, STATISTICIAN.

VITAL STATISTICS FOR FEBRUARY.

Marriages.—The marriages reported for February number 1,684, as compared with 1,594 for the same month last year. For an estimated State population of 2,056,190 in 1910, the February total represents an annual rate of 10.7, against 10.0 for January.

The February totals were highest for the following counties: Los Angeles, 355; San Francisco, 336; Alameda, 174; Marin, 92; Santa Clara, 67; Orange, 59; San Diego, 51; and Sacramento, 50.

The aggregate for San Francisco and the other bay counties (Alameda, Contra Costa, Marin, and San Mateo) was 633.

Births.—For February there were reported 2,454 living births, representing an annual birth-rate of 15.6 per 1,000 population, as compared with 14.2 for the preceding month. The corresponding total for the same month the year before was 2,318.

The totals were highest for the following counties: Los Angeles, 557; San Francisco, 501; Alameda, 258; Santa Clara, 107; Sacramento, 81; Fresno, 68; San Bernardino, 63; and Butte, 61.

Altogether, 1,525 births were registered in the twenty-six freeholders' charter cities, the leading cities being as follows: San Francisco, 501; Los Angeles, 417; Oakland, 171; Sacramento, 52; San Jose, 42; Fresno, 37; Berkeley, 35; Riverside, 30; Pasadena, 28; and Alameda, 27.

The aggregate for San Francisco and the transbay cities (Alameda, Berkeley, and Oakland) was 734, and for San Francisco and the other bay counties was 855. Similarly, the total for Los Angeles and neighboring chartered cities (Long Beach, Pasadena, and Santa Monica) was 469, and for the entire county was 580.

Deaths.—Exclusive of stillbirths, altogether 2,605 deaths were reported for February, this number including 125 delayed certificates for deaths in January. The 2,605 deaths give an annual death-rate of 16.5, against 16.2 for the month before. The corresponding total for the same month last year was 2,486.

The February death totals were highest for the following counties: Los Angeles, 580; San Francisco, 502; Alameda, 278; Santa Clara, 111; Sacramento and San Bernardino, each 76; San Diego, 67; San Joaquin, 65; Sonoma, 58; and Fresno, 50.

There were altogether 1,519 deaths in the twenty-six chartered cities, the highest totals being as follows: San Francisco, 502; Los Angeles, 386; Oakland, 154; Sacramento, 54; San Diego, 53; San Jose, 46; Berkeley, 33; Pasadena, 32; Santa Barbara and Stockton, each 26; and Alameda, 25.

The aggregate for the urban district (San Francisco and the transbay cities) was 714, and for the entire metropolitan area (San Francisco and the other bay counties) was 836. Similarly, the total for Los Angeles and neighboring chartered cities was 443, and for the whole county was 580.

Causes of Death.—For February there were reported 439 deaths, or 16.9 per cent of all, from various forms of tuberculosis, and 437, or 16.8 per cent, from diseases of the circulatory system, tuberculosis thus leading heart disease slightly.

Other notable causes of death in February were as follows: Diseases of the respiratory system, 301; violence, 241; diseases of the nervous system, 236; diseases of the digestive system, 189; Bright's disease and nephritis, 164; cancer, 133; and epidemic diseases, 118.

The deaths from epidemic diseases were as follows: Measles, 28; whooping-cough, 19; typhoid fever, 17; diphtheria and croup, 13; influenza 13; and all other epidemic diseases, 28. Typhoid fever, usually the leading epidemic disease, was surpassed for February by both measles and whooping-cough.

The 28 deaths from measles occurred in twelve counties, 13 being in Los Angeles County. The 19 deaths from whooping-cough occurred in eleven counties, 4 being in Los Angeles and 3 each in San Francisco and Santa Barbara counties.

The 17 deaths from typhoid were distributed among ten counties, as follows: Los Angeles, 4; Alameda, Kings, Placer, and San Francisco, each 2; and Napa, San Bernardino, Siskiyou, Sonoma, and Stanislaus, 1 each.

Further particulars appear in the following table:

Deaths from Certain Principal Causes, with Proportion per 1,000 Total Deaths for Current and Preceding Month, for California: February.

Cause of Death.	Deaths: February.	Proportion per 1,000. February.	Proportion per 1,000. January.
All Causes	2,605	1,000.0	1,000.0
Typhoid fever	17	6.5	7.4
Malarial fever	6	2.3	1.4
Smallpox	------	------	0.4
Measles	28	10.8	7.4
Scarlet fever	6	2.3	3.5
Whooping-cough	19	7.3	4.2
Diphtheria and croup	13	5.0	3.9
Influenza	13	5.0	3.2
Other epidemic diseases	16	6.1	3.5
Tuberculosis of lungs	378	145.1	142.6
Tuberculosis of other organs	61	23.4	17.3
Cancer	133	51.1	57.2
Other general diseases	110	42.2	38.8
Meningitis	31	11.9	10.2
Other diseases of nervous system	205	78.7	85.4
Diseases of circulatory system	437	167.7	160.6
Pneumonia and broncho-pneumonia	232	89.1	116.8
Other diseases of respiratory system	69	26.5	33.4
Diarrhea and enteritis, under 2 years	38	14.6	17.3
Diarrhea and enteritis, 2 years and over	13	5.0	6.4
Other diseases of digestive system	138	53.0	43.1
Bright's disease and nephritis	164	63.0	58.3
Childbirth	29	11.1	7.1
Diseases of early infancy	73	28.0	32.5
Suicide	54	20.7	22.9
Other violence	187	71.8	68.5
All other causes	135	51.8	46.6

Geographic Divisions.—Data for geographic divisions, including the metropolitan area, or "Greater San Francisco," are as follows:

Deaths from Main Classes of Diseases, for Geographic Divisions: February.

Geographic Division.	DEATHS: FEBRUARY. All Causes	Epidemic Diseases	Tuberculosis (All Forms)	Cancer	Diseases of Nervous System	Diseases of Circulatory System	Diseases of Respiratory System	Diseases of Digestive System	Bright's Disease and Nephritis	Violence	All Other Causes
THE STATE	2,605	118	439	133	236	437	301	189	164	241	347
Northern California	325	15	44	16	33	46	39	22	21	29	60
Coast counties	167	3	26	8	25	24	15	13	13	12	28
Interior counties	158	12	18	8	8	22	24	9	8	17	32
Central California	1,434	59	204	84	119	254	169	111	91	143	200
San Francisco	502	15	67	36	41	83	56	51	35	56	62
Other bay counties	334	9	38	14	29	73	43	25	14	37	52
Coast counties	196	9	31	11	22	31	20	13	16	16	27
Interior counties	402	26	68	23	27	67	50	22	26	34	59
Southern California	846	44	191	33	84	137	93	56	52	69	87
Los Angeles	580	33	136	24	52	90	70	30	42	40	63
Other counties	266	11	55	9	32	47	23	26	10	29	24
Northern and Central California	1,759	74	248	100	152	300	208	133	112	172	260
Metropolitan area	836	24	105	50	70	156	99	76	49	93	114
Rural counties	923	50	143	50	82	144	109	57	63	79	146

DEPARTMENT OF BACTERIOLOGY.

DR. A. R. WARD, DIRECTOR.

EXAMINATIONS MADE DURING FEBRUARY, 1910.

	Ex.-Pos.	Ex-Neg.	Total.
Diphtheria	5	79	84
Malaria	--	2	2
Tuberculosis	10	10	20
Typhoid	2	11	13
Water	--	--	
Miscellaneous	--	--	7
Rabies	--	--	7
Total			133

DEPARTMENT OF PURE FOODS AND DRUGS.

PROFESSOR M. E. JAFFA, Director.

SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Of Committee on Food Inspection with reference to the branding of eggs, under the California Pure Foods Act March 11, 1907, as amended in 1909.

We submit the following conclusions and recommend that they be adopted by this Board for its guidance and for the guidance of its inspectors:

I. That the term "cold storage," as used in said act, refers to a process for preserving eggs, by keeping them in an artificially created and uniform temperature, usually not lower than 30° nor higher than 34° above zero (Fahrenheit). But that no evasion of the law, by variations in the uniformity or degree of temperature, should be tolerated.

II. That any egg which has been held in cold storage at a period exceeding fourteen (14) days after it has been dropped from the hen, should be regarded as having been preserved by being kept or packed in cold storage, and should be so labeled.

III. That the labels: "Cold Storage Eggs," and "The product contained in this package has been kept under refrigeration for purposes of preservation," are equivalent in meaning, and either should be recognized as being proper to designate eggs that have been preserved by being kept or packed in cold storage. That the period of refrigeration may or may not be stated, at the option of the dealer. This designation should be given equal prominence with other parts of the label, and in all cases should be plainly distinguishable to the casual observer.

This label is required whenever and wherever eggs, as such, are offered or exposed for sale. This includes the hotel, restaurant and all other public eating houses, as well as wholesale and retail grocery and produce stores. In the case of hotels, restaurants and other public eating houses, the menu card may be regarded as the label, and it should inform the customer of the fact, if cold storage eggs are used.

IV. *a.* That the terms "Fresh Eggs," "Ranch Eggs," Farm Eggs," and "Eggs," unless qualified by words indicating age or inferiority of quality, such as "Held" or "Seconds," or other appropriate words, are properly applicable only to eggs that are sound, sweet, clear and full (not more than three-fourths inch air space diameter measurement), and which have not been held for more than fourteen (14) days after being dropped from the hen.

That if qualified by the use of the word "Seconds," or other language plainly indicating inferiority, these terms are properly applicable to eggs of like age, sound, sweet and odorless, free from spots and rots, but showing greater air space and indicating a weakness in the tissues.

That if qualified by language plainly indicating additional age, these terms are properly applicable to eggs that are sound, sweet, clear and full, although they have been held longer than the stated period, but should never be used as a label for an egg that has been preserved by cold storage, or otherwise.

b. That the term "Fresh Eastern Eggs" is properly applicable to eggs from the Middle Western States, shipped in refrigerated cars, sound, sweet, clear, reasonably full, and which have not been held longer than twenty-one (21) days after being dropped from the hen. If held for more than twenty-one (21) days or is not up to the prescribed standard, the fact should be indicated by appropriate language on the label. If such eggs have been kept in cold storage at a period exceeding fourteen (14) days after having been dropped from the hen, that fact should be indicated by the proper label.

c. That the use of the terms "Extras," "Fancy," "Selected," and like words or phrases, indicates superior quality; that used in connection with the terms "Fresh," "Ranch," "Farm," "Cold Storage," or its equivalent, or "Fresh Eastern," they indicate a superior grade of eggs of that variety; and that used in connection with the word "Eggs," without designation as to whether the product is fresh, storage or eastern, they indicate a superior quality of fresh eggs.

We suggest the twenty-one (21) day period in this case for the reason that the use of the word "Eastern," in connection with the word "Fresh," necessarily modifies the latter and is indicative of age.

Respectfully submitted March 5, 1910.

William F. Snow,
M. E. Jaffa,
J. E. Gardner,
Committee on Food Inspection.

FOOD INSPECTION DECISION NO. 114.

THE LABELING OF "CARACAS COCOA."

The Board of Food and Drug Inspection has had under consideration for some time the question of the propriety of the use of the term "Caracas" as applied to cocoa coming from South America. Valuable information has been obtained through the Department of State in the form of a dispatch from the American consul at La Guayra, Venezuela, under date of September 30, 1909. In reply to a request from the Secretary of State for a report on the cocoa of Venezuela and its proper designation, the American consul states as follows:

> In reply thereto I am informed that the term "Caracas cocoa" or "Caracas cacao" should properly, according to its original usage, be applied only to cacaos exported through the port of La Guayra, but through the extension of the industry and similarity of product it has become corrupted so as to cover all "current" or "ordinary" cacaos of Venezuela, including those coming from Rio Chico, Rio Caribe, Guiria, Carupano, and Higuerote. This has come about because of the parallel quality of these cacaos with those of the so-called "Caracas" district.
>
> There are three Venezuelan districts usually found in current quotations of cacaos: Angostura, being the cacaos coming out of the lower Orinoco basin through Ciudad Bolivar; Caracas, those mentioned above; Maracaibo, those cacaos being exported through Maracaibo. Exports from La Guayra and Puerto Cabello, with the exception of perhaps 10,000 bags (mentioned below) cover only such cacaos as are generally known as "current," and therefore classified by importers in the United States as "Caracas."
>
> There are some small districts lying between La Guayra and Puerto Cabello, known as Choroni, Ocumare, Cepe, and Chuao, turning out about 10,000 bags annually of a very high grade of cocoa, but this virtually all goes to Europe, principally to Paris, and is therefore not quoted in the ordinary "brokers" cocoa reports.
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> * * * * * *
>
> The cacaos from Carupano, Rio Caribe, and Higuerote are said to be of the same grade as these two latter. The Angosturas may be more or less a cent better in grade than the samples of "Caracas" sent herewith.
>
> * * * * * *
>
> From what I can learn of the cacao situation I think the name "Caracas" has gotten to be more of a designation of the current class of Venezuelan cacao than to indicate the district of its production, and under the circumstances it seems the term has taken on the broader meaning suggested in the letter of the Secretary of Agriculture of August 30, 1909. To further indicate that this is true I beg to inclose a "Broker's cocoa report," from a New York commission house, wherein no other Venezuelan districts are named than Angostura, Caracas, and Maracaibo.

In House Documents, volume 65, serial 4844, Fifty-eighth Congress, page 155, is the following:

> The cacao of Venezuela also finds a ready sale in the United States, in the markets of which it is known, like coffee, by the name of "Caracas" and "Maracaibo," the former embracing the cacao coming from Rio Caribe, Guiria, Carupano, Rio Chico, Higuerote, and other places on the eastern coast; the other grade comes from the States of Zulia, Merida, Trujillo, and Tachira.

This corresponds entirely with the views expressed by our consul at La Guayra.

After a consideration of this question, the Board is of the opinion that the term ''Caracas'' is properly applied to the area mentioned in the above quotation from House Documents, volume 65.

So many Notices of Judgments have been received at the State Laboratory during the last month that it is impossible to reprint even a résumé of all of them. They are, therefore, merely listed by titles, and any one interested in any particular number or numbers, can receive the same by addressing the Director of the State Laboratory, Berkeley, Cal.

Notice of Judgment No. 139.—Adulteration and Misbranding of Vanilla Extract. (Solution of artificial vanillin.)

Notice of Judgment No. 140.—Misbranding of Vanilla Extract. (As to place of manufacture.)

Notice of Judgment No. 141.—Misbranding of Lemon Extract. (Low per cent of citral.)

Notice of Judgment No. 142.—Adulteration of Almond Extract. (Contains hydrocyanic acid.)

Notice of Judgment No. 143.—Adulteration and Misbranding of Strawberry Extract. (Artificial.)

Notice of Judgment No. 144.—Misbranding of a Drug Preparation. (Dr. Fahrney's Teething Syrup.) Contains 8.84 per cent alcohol by volume; chloroform, 0.408 minim per fluid ounce; morphine, 0.126 grain per fluid ounce. It was evident that the preparation was misbranded in violation of section 8 of the act because the statements, "Is the best remedy for teething," "A sure remedy for all ailments incident to babes from one day old to two or three years," "Contains nothing injurious to the youngest babe," and "No bad results from the continued use of it," were false, deceptive, and misleading, as it was not the best remedy for teething, was not a sure remedy for all ailments incident to babies, does contain injurious ingredients, viz., alcohol, chloroform, and morphine, and because bad results do follow from the continued use of it.

Notice of Judgment No. 145.—Adulteration of Seedless Raisins. The facts which led to the filing of the libel were as follows: An inspector of the United States Department of Agriculture found on the premises of the Connecticut Pie Company, at the corner of Wisconsin avenue and O streets, Washington, D. C., 150 boxes of infested seedless raisins, labeled as above described, samples of which were examined and found to be in a filthy, decomposed condition, and infested with worms and other animal matter.

Notice of Judgment No. 146.—Adulteration of Seedless Raisins. (Similar to No. 145.)

Notice of Judgment No. 147.—Adulteration and Misbranding of Lemon Extract. (Lemon oil deficient.)

Notice of Judgment No. 148.—Adulteration and Misbranding of Vanilla Extract. (Absence of extract of vanilla bean.)

Notice of Judgment No. 149.—Adulteration and Misbranding of Lemon Extract. (Absence of lemon oil.)

Notice of Judgment No. 150.—Adulteration and Misbranding of Terpeneless Lemon Extract. (Trace only of citral. Lemon oil absent.)

Notice of Judgment No. 151.—Adulteration of Vanilla Extract. (Total absence of soluble matters of the vanilla bean.)

Notice of Judgment No. 152.—Adulteration and Misbranding of Pineapple and Lemon Extract. (Lemon extract deficient. Artificially colored.)

Notice of Judgment No. 153.—Adulteration of Peaches.—On or about August 21, 1909, an inspector of the Department of Agriculture found in the possession of Henry L. Pern, at No. 1115 D street N. E., Washington, D. C., 35 boxes of peaches, each box containing 50 pounds, labeled "Le Rious Peaches." These goods had been purchased by said Kern from the firm of Miller, Clagett Co., Washington, D. C., and were intended for use in the manufacture of pies. A sample of the peaches was collected by the inspector and submitted to the Bureau of Chemistry for examination, where it was found to be filthy, decomposed, mold covered, and infested with worms and unfit for human consumption.

Notice of Judgment No. 154.—Misbranding of Cheese. (Skim milk cheese, not full cream cheese.)

Notice of Judgment No. 155.—Misbranding of Baking Powder. (Underweight.)

Notice of Judgment No. 156.—Adulteration and Misbranding of Tomato Catsup. (Sample found to contain filthy, decomposed, putrid vegetable substance, and to be made from tomato pulp screened from peelings and cores.

Notice of Judgment No. 157.—Adulteration and Misbranding of Powdered Asafœtida. (Product mixed with ground nut hulls, etc.)

Notice of Judgment No. 158.—Adulteration and Misbranding of Peppers. (Added mixture of foreign seeds.)

Notice of Judgment No. 159.—Adulteration and Misbranding of Pepper. Pepper shells and extraneous matter (dirt).

Notice of Judgment No. 160.—Misbranding of Buchu Gin. (False claims as to medicinal value.)

Notice of Judgment No. 161.—Misbranding of Evaporated Apples. (Sample consisted of wormy and partly decayed fruit.)

Notice of Judgment No. 162.—Adulteration of Seedless Raisins. (Raisins infested with worms and other insects and so contaminated as to be unfit for use in foods.)

Notice of Judgment No. 163.—Misbranding of Mapleine. (Name misleading and deceiving.)

Notice of Judgment No. 164.—Misbranding of Pepper. (Added mixture of pepper and olive pits.)

Notice of Judgment No. 165.—Misbranding of Canned Peas. (Underweight.)

Notice of Judgment No. 166.—Adulteration and Misbranding of Custard. (Substitution of corn starch for eggs.)

Notice of Judgment No. 167.—Misbranding of Macaroni. (As to place of manufacture.)

Notice of Judgment Nos. 168, 169, 187, 189, 193, 195, 197, 199.—Misbranding and Adulteration of Vinegars.

Notice of Judgment No. 170.—Misbranding of Corn Meal. (Misrepresentation of process.)

Notice of Judgment Nos. 171, 172, 173, 174.—Adulteration and Misbranding of Stock Feed. (Foreign substance added. Low in protein, etc.)

Notice of Judgment No. 175.—Adulteration of Water. (Containing poisonous and deleterious ingredients.)

Notice of Judgment No. 176.—Adulteration of Confectionery. (Silver Dragees.) This Notice of Judgment is of special interest to candy manufacturers in California. The Laboratory has been in correspondence with several confectioners in connection with this very question, and the reply to all inquires has been that in accordance with the law, Silver Dragees must be classed as adulterated confectionery.

Notice of Judgment No. 177.—Misbranding of Coffee. (Chicory added but not stated on label.)

Notice of Judgment No. 178.—Misbranding of Canned Cherries. (Underweight.)

Notice of Judgment No. 179.—Adulteration and Misbranding of Cottonseed Meal. (Cottonseed hulls added. Statements misleading.)

Notice of Judgment No. 180.—Misbranding of a Drug (Gowan's Pneumonia Cure). (Statements false and misleading.)

Notice of Judgment No. 181.—Misbranding of a Drug (Eyelin). (False and misleading statements.)

Notice of Judgment No. 182.—Misbranding of a Drug (Bromo Febrin). (Statements false and misleading.)

Notice of Judgment Nos. 183 and 192.—Adulteration and Misbranding of Powdered Colocynth. (Drug.)

Notice of Judgment No. 184.—Misbranding of a Drug (Radol). (False claims as to medicinal value.)

Notice of Judgment No. 185.—Adulteration of Cream. (Butter fat abstracted in part.)

Notice of Judgment No. 186.—Misbranding of Peaches and Apricots. (Underweight.)

Notice of Judgment No. 188.—Adulteration of Currants. (Infested with worms and other animal matter.)

Notice of Judgment No. 190.—Misbranding of Rice. (False representation of locality.)

Notice of Judgment No. 191.—Misbranding of a Drug ("Dr. Parker's Universal Headache Cure").

Notice of Judgment No. 194.—Adulteration and Misbranding of Lemon Extract. (Lemon oil absent. Only trace of citral.)

Notice of Judgment No. 196.—Misbranding of Oil of Lemons. (Underweight.)

Notice of Judgment No. 198.—Adulteration and Misbranding of Syrup. (Sucrose syrup added.)

DEPARTMENT OF EPIDEMIOLOGY.

WILLIAM F. SNOW.

This department is omitted this month owing to incompleteness of tabulated report.

CALIFORNIA STATE BOARD OF HEALTH.

PARTIAL LIST OF PUBLIC HEALTH ORGANIZATIONS OF CALIFORNIA.

1. General.
    - California Public Health Association.
    - Public Health Commission of State Medical Society.
2. For the Prevention of Tuberculosis.
    - California Association for the Study and Prevention of Tuberculosis.
    - Affiliated societies: Alameda County ..; Long Beach ..; Los Angeles ..; Monrovia (Visiting Nurses' Association); Pasadena ..; Redlands ..; Sacramento (White Crusaders); San Diego ..; San Francisco ..; Santa Ana ..; Santa Barbara ..; Sierra Madre ...
3. For the Prevention of Syphilis and Gonorrhea.
    - California Association for the Study and Prevention of Syphilis and Gonorrhea (R. A. Archibald, M.D., Secretary, Health Office, Oakland, Cal.).
4. Other Organizations carrying on Important Public Health Work.
    1. California Federation of Women's Clubs.
    2. California Teachers' Association (L. E. Armstrong, Secretary, Oakland, Cal.).
    3. California Press Association (F. W. Richardson, President, Berkeley, Cal.).
    4. Board of Charities and Corrections (W. S. Gates, Secretary, San Francisco).
    5. California Playground Association (F. W. D'Evelyn, M.D., Secretary, 1214 Polk street, San Francisco).
    6. Red Cross Society and Divisions.
    7. White Crusaders. (W. A. Briggs, M.D., President, Sacramento, Cal.).
    8. Volunteers of America.
    9. Salvation Army.
    10. Juvenile Courts.

This list is only partially completed and will be repeated, with additions, next month. Any letters or questions sent to the Board will be answered or referred to the above mentioned organizations.

PARTIAL LIST OF CITY HEALTH OFFICERS.

Alameda	Dr. L. W. Stidham
Alhambra	Dr. F. E. Corey
Alturas	Dr. John Stile
Anaheim	Dr. J. L. Beebe
Antioch	E. C. Worrell
Azusa	Dr. S. A. Ellis
Berkeley	Dr. J. J. Benton
Biggs	Dr. B. Caldwell
Black Diamond	Dr. F. S. Gregory
Bakersfield	J. E. Yancey
Chico	G. H. Taylor
Colusa	Dr. W. T. Rathbun
Coronado	Dr. Raffaele Lorini
Dixon	W. C. Rhem
East San Jose	Dr. W. A. Low
Elsinore	Dr. S. E. Ball
Escondido	Dr. David Crise
Etna	Dr. W. H. Haines
Eureka	Dr. W. L. Perrott
Fairfield	Dr. S. G. Bransford
Ferndale	Dr. L. Michael
Fort Jones	Thos. Bransom
Fresno	Dr. Geo. H. Aiken
Gilroy	Dr. Jonas Clark
Glendale	R. E. Chase
Grass Valley	Dr. J. T. Jones
Hayward	Dr. F. W. Browning
Healdsburg	Dr. O. C. Hueb
Hermosa Beach	H. Vetter
Hollywood	E. O. Palmer
Huntington Park	Dr. W. Thompson
Lakeport	Dr. H. P. Stippe
Livermore	Dr. H. G. McGill
Lodi	Dr. F. W. Colman
Long Beach	Dr. W. H. Newman
Los Angeles	Dr. L. M. Powers
Los Gatos	Dr. Elenor S. Yelland
Madera	Dr. Mary R. Butin
Martinez	Dr. E. E. Brown
Merced	Dr. C. H. Castle
Mill Valley	Capt. M. Staples
Modesto	Dr. F. R. De Lappe
Monterey	Martin Birks
Morgan Hill	Dr. D. W. Watt
Mountain View	Dr. Philo Hull
Napa	J. D. Treadway
National City	Dr. Theo. F. Johnson
Nevada City	Hugh Murchie
Oakland	Dr. E. N. Ewer
Ontario	Dr. C. S. Orr
Orange	Dr. Ida B. Parker
Oroville	Dr. W. F. Gates
Oxnard	Dr. Ralph W. Avery
Pacific Grove	Dr. H. N. Yates
Palo Alto	Dr. Chas. Boxmeyer
Pasadena	Dr. Stanley P. Black
Petaluma	Dr. R. B. Duncan
Placerville	Robert L. Crocker
Pomona	Dr. T. J. Wilson
Piedmont	Geo. T. Burtchael
Redding	L. D. Poole
Redlands	Dr. J. M. Wheat
Redondo Beach	Dr. D. R. Hancock
Richmond	Dr. H. N. Barney
Riverside	Dr. Thos. R. Griffith
Sacramento	Dr. Wm. K. Lindsay
Salinas	Dr. Garth Parker
San Bernardino	Dr. J. G. Ham
San Diego	Dr. F. H. Mead
San Francisco	Dr. W. F. McNutt, Jr.
San Jose	Dr. A. L. Cothran
San Jacinto	Charles Long
Santa Ana	Dr. J. I. Clark
Santa Barbara	Dr. Benjamin Bakewell
Santa Cruz	Dr. C. H. Anderson
Santa Monica	Dr. W. H. Parker
Santa Rosa	Dr. J. W. Jesse
Sisson	Dr. L. Gouzuet
South Pasadena	Dr. C. A. Whiting
Stockton	Dr. S. W. R. Langdon
Turlock	Dr. E. L. Clough
Vallejo	Dr. F. T. Bond
Watsonville	Dr. F. H. Koepke
Yreka	Dr. A. J. Collar

LIST OF COUNTY HEALTH OFFICERS.

County.	*Health Officer.*	*Address.*
Alameda	Dr. C. L. McKown	Niles
Alpine		
Amador	Dr. E. E. Endicott	Jackson
Butte	Dr. L. Q. Thompson	Oroville
Calaveras	Dr. E. W. Weirich	Angels Camp
Colusa	Dr. W. T. Rathbun	Colusa
Contra Costa	Dr. J. Wallace DeWitt	Antioch
Del Norte		
El Dorado	Dr. S. H. Rantz	Placerville
Fresno	Dr. G. L. Long	Fresno
Glenn	Dr. J. A. Randolph	Willows
Humboldt	Dr. J. H. Mallery	Eureka
Imperial	Dr. E. E. Patten	Imperial
Inyo	Dr. I. J. Woodin	Independence
Kern	Dr. W. S. Fowler	Bakersfield
Kings	Dr. W. H. Miller	Hanford
Lake	Dr. W. E. Upton	Kelseyville
Lassen	Dr. E. C. Houston	Bieber
Los Angeles	Dr. O. R. Stafford	3754 Vermont ave., Los Angeles
Madera	Dr. Mary R. Butin	Madera
Marin	Dr. J. H. Kuser	Novato
Mariposa	Dr. H. Kylberg	Mariposa
Mendocino	Dr. John S. Hogshead	Ukiah
Merced	Dr. W. E. Lilley	Merced
Modoc	Dr John Stile	Alturas
Mono		
Monterey	Dr. Garth Parker	Salinas
Napa	Dr. Adolph J. Kahn (County Physician)	Napa
Nevada	Dr. John T. Jones	Grass Valley
Orange	Dr. C. D. Ball	Santa Ana
Placer	Dr. G. H. Fay	Auburn
Plumas	Dr. G. B. Lasswell	Quincy
Riverside	Dr. Geo. E. Tucker	Riverside
Sacramento	Dr. Hugh Beattie	Elk Grove
San Benito	Dr. R. G. Curtis	Hollister
San Bernardino	Dr. D. C. Strong	San Bernardino
San Diego		
San Francisco	Dr. W. F. McNutt, Jr.	San Francisco
San Joaquin	Dr. R. B. Knight	Stockton
San Luis Obispo	Dr. H. M. Cox	San Luis Obispo
San Mateo	Dr. W. G. Beattie	Colma
Santa Barbara	Dr. J. C. Bainbridge	Santa Barbara
Santa Clara	Dr. Wm. Simpson	San Jose
Santa Cruz		
Shasta	Dr. F. Stabel	Redding
Sierra	Dr. R. B. Davy	Downieville
Siskiyou	Dr. F. J. McNulty (County Physician)	Yreka
Solano	Dr. S. G. Bransford	Suisun
Sonoma	Dr. S. S. Bogle	Santa Rosa
Stanislaus	Dr. F. R. De Lappe	Modesto
Sutter	Dr. J. McFadyen	Yuba City
Tehama	Dr. A. P. Tarter	Tehama
Trinity	Dr. D. B. Fields	Weaverville
Tulare	Dr. F. A. Coombs	Visalia
Tuolumne	Dr. C. E. Congdon	Jamestown
Ventura	Dr. A. A. Maulhardt	Oxnard
Yolo	Dr. A. E. Blevins	Woodland
Yuba	Dr. J. H. Barr	Marysville

THE CALIFORNIA STATE BOARD OF HEALTH BULLETIN WILL BE SENT FREE TO ANY CITIZEN OF THE STATE ON REQUEST.